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ABSTRACT OF A LECTURE
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TRACHEOTOMY:
WITH CASES.

BY
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ABSTRACT OF A LECTURE

ON THE

OPERATION OF TRACHEOTOMY:

WITH CASES.

GENTLEMEN,—I propose to call your attention to-day to the operation of tracheotomy, with special reference to its performance with the view of saving life in the later stages of croup and diphtheria. These two diseases are characterised by the effusion of a false membrane on the mucous surface of the air-passages ; in croup, the lymph being deposited first in the trachea, with a tendency to spread down into the bronchi, sometimes up into the lower orifice of the larynx ; in diphtheria, the deposit being seen first on the fauces, tonsils, and pharynx, with a tendency to spread down through the upper opening of the larynx into the trachea, and even into the bronchi. When in either disease the effusion of lymph is excessive, the respiration is impeded to such a degree that the patient dies of suffocation.

I shall not take up your time with any general remarks on the nature, causes, and symptoms of these affections, nor give you any indications for their treatment in the earlier stages ; for, though I have very well defined ideas on these subjects, most of you are aware that both in teaching and practice I confine myself exclusively to surgical cases. In consequence, I have no opportunity of observing the effects of remedies, except such as are afforded by the reports of those medical men who request my assistance in the more advanced stage. But there is one point to which I beg most earnestly to call your attention—it is that both of these diseases—but more especially diphtheria, and more manifestly when they occur as epidemics—may exist in one of two types, the sthenic or asthenic. In the asthenic, the tendency is to cause death by exhaustion—failure of the vital powers ; in the sthenic, by suffocation. You will hear it sometimes stated that, because diph-

theria is a general disease—somewhat like scarlet fever—and the lymphic effusion but the local manifestation of it, therefore it is unphilosophical to propose tracheotomy in such a case ; but you will remember that this operation has never been suggested with any intention of cutting short the disease, nor ought it to be performed when there is great prostration. It is in the sthenic form alone that it is admissible. And what I would urge on you is this, when you find that your patient, whatever be the original disease—croup or diphtheria—is not improving by the treatment you have been adopting ; when you find that the effusion is going on to produce suffocation ; when the tendency is to death by apnoea more than by exhaustion, then you ought to step in and perform tracheotomy for the purpose of preventing immediate death, and so give longer time for the patient to live through the disease and ultimately throw it off. Nay, you will find, after a comparatively limited experience, that you will be able to recognise early in the progress of a case whether the tendency is to apnoea or exhaustion ; and I would be inclined to urge my own experience as a reason for performing tracheotomy in the class of cases in which it will inevitably be required, before the struggle for breath has exhausted the strength of the sufferer, so rendering the operation less successful than it might have been.

In short, let not the name of the disease deter you ; but, when you find a patient clearly progressing to death by suffocation, while the vital powers are otherwise vigorous, my maxim for you would be, open the windpipe and ward off the impending death, whatever be the ultimate result : you have done your duty and saved life, at least temporarily. I admit that it is sometimes a very nice point to decide, when to interfere and when to refrain, and especially to discover when the effusion has spread down into the bronchi or bronchial tubes, in which case the operation would be useless. Percussion of the chest and the sibilant *râles* discoverable by auscultation are valuable aids to diagnosis ; but there is one most characteristic sign which I find a sure and ready guide to distinguish between dyspnoea depending on pulmonary occlusion, whether congestive or bronchial, and that depending on tracheal obstruction—I allude to the observation of the respiratory movements. When the obstruction is in the larynx or trachea, the powerful attempts at respiration will be plainly visible, and their inefficacy will be evidenced by the drawing in of the costal cartilages and the intercostal spaces. When this is well marked and increasing, the pulse being moderately good, it is a proof of the vigour of the vital powers, and is a clear indication for tracheotomy.

The steps of the operation are very easily indicated, but very difficult in the performance. The great maxim is, "operate leisurely and without hurry". The patient having been put under the influence of chloroform—a very great assistance in this operation—an incision is to be made about an inch and a half long, from half an inch below the cricoid cartilage downwards. Layer after layer of the cellular tissue is to be divided till the trachea comes into view. This, which is easily stated, is a troublesome matter, owing to the perpetual movements of the trachea and the bulging into the wounds of veins, cellular tissue, and in children the apices of the thymus gland, all of which must be held aside with retractors. Any vessel which bleeds must be tied; and it must be a principle that the second stage of the operation is not to be undertaken till the white rings of the trachea are clearly seen at the bottom of the wound. A sharp hook is now to be fixed in the upper part of the trachea brought into view, and the knife plunged into it—the back of the knife being towards the larynx—and the incision made half an inch long. A pair of closed dressing forceps is now to be introduced into the slit and opened, on which there will be a violent struggle, then a forcible expiration expelling quantities of false membrane and viscid mucus; and presently the patient will lie quiet, breathing tranquilly through the opening. The silver tube is now to be introduced, and the operation is completed. The only special precaution which I adopt in the after-treatment is to order the air in the apartment to be kept moist by steam from a kettle, or by some other means.

The following case illustrates these points very well.

William S., aged 7 years, when convalescing from scarlet fever, had an attack of tonsillitis. The palate and tonsils became covered with a white exudation, and the voice became hoarse. After a few days he improved so much that there was no anxiety about him, when on the 12th January there was considerable difficulty in breathing and a hoarse barking cough. The white patch was to be seen on the tonsil, evidently extending downwards. On the 13th he continued in the same state, but on the 14th the symptoms had increased in severity so that Dr. Pirie, the medical attendant, requested me to visit him in consultation. When we saw him, however, the dyspnoea had become less urgent, so that we thought that he had a hope of recovery without operation. On the 15th all the symptoms became aggravated, and when I saw him in the evening with Dr. Pirie, it was quite evident that the struggle for breath would soon wear him out. The pulse was fair; he could swallow well; but the fits of dyspnoea were so frequent and urgent that he was tossing

about, gasping, and begging to be relieved. An examination of the chest showed most clearly that the obstruction was in the larynx or trachea, and that the effusion had not extended into the smaller bronchi. The muscles were acting very powerfully, so that at each attempt at inspiration the sternum, costal cartilages, and intercostal spaces, were violently pulled inwards. The effort to inspire was evidently very strong, but there was hardly any room for air to pass: a clear indication for opening the windpipe to admit the air.

The nature of the operation having been explained to the parents, they committed the child to our care to do what we thought best for it. The assistance of my friend Dr. Smart having been procured, I proceeded to perform tracheotomy precisely as before described, and with the same result. The child, who before was tossing about in an agony of dyspnoea, was soon breathing with perfect tranquillity through the tracheal silver tube.

I need not describe the progress of the case from day to day. Four or five of my students most kindly volunteered to be with the patient for the first forty-eight hours, during which time the child was never left without skilled attendance, Dr. Pirie visiting two or three times a day. The result was most satisfactory. The tube was removed on the eighth day, and after that the child made a rapid recovery.

POSTSCRIPT.

As an appendix to the above abstract, I may state that I have now performed tracheotomy in thirty-nine cases; of these thirteen recovered, or one out of every three operated on. As all those operated on were considered to be in a hopeless state, it may be concluded that thirteen lives were *saved* by the operation.

In the *Glasgow Medical Journal* I published details of my first twenty-six operations. I here append notes of the last thirteen.

CASE XXVII, with Dr. Gray, 30th Dec., 1865. Diphtheria; aged 5. Result—death on the fifth day from extension of inflammation.

CASE XXVIII, with Dr. Coats, 20th April, 1866, aged 3. Chicken-bone impacted in glottis. Result—death from inflammation in bronchi.

CASE XXIX, with Dr. Tindal, 18th Jan., 1867. Diphtheria; aged 7. Result—cure; tube removed on fourth day.

CASE XXX, with Dr. R. Grieve, 31st Jan., 1867. Croup; aged 3. Result—death on the third day.

CASE XXXI, with Dr. G. Miller, 27th Oct., 1867. Diphtheria; aged 5. Result—cure; tube removed on the seventh day.

CASE XXXII, with Dr. Paterson, Partick, 10th Dec., 1867. Diphtheria ; aged 2. Result—death in two days.

CASE XXXIII, with Drs. A. D. and McCall Anderson, 4th May, 1869. Croup ; aged $2\frac{1}{2}$. Result—death on the second day.

CASE XXXIV, with Dr. Gray, 6th Dec., 1869. Diphtheria ; aged 5. Result—death on the sixth day.

CASE XXXV, with Dr. Smellie. Combination of croup and spasmodic croup ; boy aged 9 ; 15th March, 1870. Tube still in ; child goes into spasm on its removal.

CASE XXXVI, with Dr. Mather, 22nd March, 1870. Croup ; aged 4. Result—death ; extension of inflammation.

CASE XXXVII, with Dr. McMillan, 13th Nov., 1870. Diphtheria ; aged 8. Result—death from spreading of the disease downwards on the eighth day, after tube was removed.

CASE XXXVIII, with Dr. Pirie, 15th Jan., 1871. Diphtheria ; aged 8. Result—cured ; tube removed on the eighth day.

CASE XXXIX, with Dr. Ronald, 20th Jan., 1871. Diphtheria ; aged 7. Result—death on the third day.

